**3rd Marking Period Exam Review KEY**

1. A meter stick is hung from a string and balances at the 50 cm mark. Calculate ***at what cm mark*** a 200 g weight would need to be hung on the left side of the pivot to balance the following weights on the right side:

Torque() = Radius(r) x Force(F)

Equal Torque is Balance

 L =  R

rL x FL = rr x Fr

0 10 20 30 40 60 70 80 90 100

r = ?

200g

1. 100 g at 60 cm mark

(100 x 10) = 200 x r

1000 = 200 r Hang at \_\_\_45\_\_\_\_\_\_ cm

5 = r so hang it 5 cm left of fulcrum

1. 150 g at 30 cm mark

r = 15

Hang at \_\_\_\_35\_\_\_\_ cm

1. Look at Figure 8.23 in the text book. Be able to describe where the center of gravity is on an object thrown through the air. (Like the wrench)

The point at which it rotates through the air

1. An SUV will roll over easier than a Cooper Mini. In terms of Center of Gravity, why is this true?

Lower COG means more stable. Higher COG or off center COG less stable

1. What are the equations and units for Potential Energy (PE) and Kinetc Energy (KE)?

PE = mgh, Joules KE = ½ mv2, Joules

1. In the PE equation, what is the value of “g”? Where in the room can you find it?

g = 9.8 m/s2, and it’s on the ceiling.

1. A shot putter heaves a 7.26 kg shot with a velocity of 7.5 m/s (v). What is the energy of the shot? Is this kinetic energy or potential energy?

It’s KE, 204.2 J

1. A rifle can shoot a .0042 kg bullet at 965 m/s. What is the kinetic energy of the bullet?

1955.6 J

1. Find the potential energy of a 1kg brick at a height of 5 meters.

49J

1. A roller coaster has its most potential energy at the top of the highest hill. If the PE at that hill is 200J, what is the PE and KE at the bottom of the hill? What would the KE and PE be ½ way down the hill?

At bottom: KE = 200J and PE = 0…….1/2 way: KE = 200 J, PE = 200J

1. What are the equation for Work and Power? What are their units?

W = FxD……….P = W/t = (FxD)/t

1. Helga pushes an 80 N box across a 50 meter warehouse. How much work did she do while pushing the box?

4000 J

1. At work, you apply a force of 72 N to lift a box of Ramen Noodles a height of 2.5 meters. It takes you 2 seconds to lift it. How much power does this require?

90 W

1. Fester is holding a 30 N box over his head from 12:00 to 12: 30. Fester is only 1.7

meters tall. How much work is Fester doing from 12:00 to 12:30?

Zero J, since the distance he is moving the weight is 0 meters.

1. What is the equation for finding the Mechanical Advantage of a machine?

O/I = MA

1. Identify the machine type: \_\_\_\_\_1st Class lever\_\_\_\_.

Label:

15N

* Fulcrum

Input

* Input force

F

Output

* Output force

12N

Find the Mechanical Advantage

(Show all work)

Output = \_\_\_15\_\_\_\_\_\_ N 1.25 (no units)

Input = \_\_\_12\_\_\_\_N

Read page 111 to 114 to learn about the mechanical advantage of pulley systems. Pulleys can offer no mechanical advantage, or they can multiply the force by many times. Find the rule to determine the mechanical advantage of a pulley system. Write it in the space below before continuing on.

MA = the number of supporting ropes.

1. What force would be needed to lift the following boxes, and how far will you have to

pull them to raise each box 2 meters?

MA = 1 MA = 2

a) ? N b) ? N

40N

40 N

Answer: \_\_\_40N\_\_\_\_\_\_\_ Answer:\_\_20N\_\_\_

\**The One Point Phrase is”****Pants on the Ground****”*